*J. Mar. biol. Ass. India*, 1963, 5 (2): 284-288

# *METAPENAEUS KUTCHENSIS* SP.NOV., A PENAEID PRAWN FROM THE GULF OF KUTCH

By **P. C.** GEORGE, M. J. GEORGE AND P. VEDAVYASA RAO
*Central Marine Fisheries Research Sub-Station, Ernakulam-6*

WHILE examining a collection of prawns from the Gulf of Kutch, the authors found that some of the specimens do not fully conform with any of the known Indo-Pacific species of the genus *Metapenaeus*. The dominant species reported from the commercial catches of this region (Srivatsa 1953 and Lakumb 1960) is *Metapenaeus monoceros* Fabricius. A careful study of the material has shown that although the specimens possess certain characters of *M. monoceros* they reveal several striking features that are not shared by this species. Since the characteristics of these specimens do not correspond with those of any species described so far, the authors have decided to describe the material discussed hereunder as a new species of the genus *Metapenaeus* Wood-Mason & Alcock.

## **Metapenaeus kutchensis** sp.nov.

### *Material*

• Gulf of Kutch, N.W. India, 3-12 m.; numerous specimens ranging in total length from 52 mm. to 123 mm. and in carapace length from 19 mm. to 48 mm. from commercial catches.

Holotype : <? 104 mm., carapace 40 mm.; (16-4-1963).

Allotype : £ 116 mm., carapace 44 mm. ; (16-4-1963).

Type specimens deposited in the reference collections of Central Marine Fisheries Research Institute, Mandapam Camp.

### *Description*

Pubescence scarce and variable in different specimens. The carapace is more glabrous than tomentose and the pubescence is confined to a few restricted areas such as the sides below the rostrum, postrostral carina, the anteromedian region of the carapace and in the various sulci. The abdomen too is generally glabrous except for strips of pubescent areas on the pleura of the segments, especially the fifth and the sixth.

*Rostrum :* Teeth 7-8+epigastric ; straight with a small crest, extending slightly beyond the tip of the antennular peduncle. Adrostral carina ending near epigas-

trie; sulcus extending to middle of carapace ; postrostral carina ending in a glabrous expansion 1/6 length of carapace from its posterior edge.

*Carapace :* Postocular sulcus at an angle of 40° to rostrum ; orbito-antennal sulcus meeting the hepatic below hepatic spine ; hepatic sulcus descending vertically and then curving towards pterygostomial angle. Cervical sulcus straight ; branchiocardiac sulcus distinct, carina meeting the glabrous posterior extension of the hepatic spine. Antennular spine strong; epigastric spine at i length of carapace.

*Antennule :* Antennular flagella more or less equal and J length of peduncle. Prosartema exceeding eye and reaching tip of basal segment; stylocerite attaining half basal segment.

*Antenna:* Scaphocerite reaches as far as tip of antennular peduncle, surpassing the eye by double the length.

*Mandible:* Distal segment of mandibular palp reaching almost tip of basicerite. It is twice as long as wide and twice the length of the basal segment.

*Maxillule :* The basal segment of palp with a long spine with its base £ segment, its tip reaching slightly behind the tip of the segment, distal segment with rounded apex and i length of basal segment.

*Thoracic appendages:* Dactyl of third maxilliped slightly smaller than propodus and extending almost to the tip of carpocerite. First pereiopod reaching base of carpocerite; second reaching tip of carpocerite ; third reaching tip of antennular segment; fourth reaching tip of basicerite ; fifth reaching to middle of scaphocerite. Ischium of first pereiopod with a spine which is smaller than the basial; merus of fifth pereiopod of adult male with a shallow depression which is bounded anteriorly by a small tooth ; margin of the merus anterior to the tooth entire.

*Abdomen :* Dorsal carination conspicuous only from fourth to sixth segment. Telson grooved on the dorsal side and with very minute dorsolateral spinules.

*Gastric mill:* (Fig .1, e & f). Cardiac plate with 30-32 spinules ; zygocardiac ossicle with upper row of 9-10 short tubercles and a lower row of 10-11 longer tubercles of which first three are relatively blunt and the rest spinous. Prepyloric ossicle with a median rounded tubercle projecting beyond 7-8 lateral tubercles; urocardiac ossicle broadly subpentagonal; cardiac ossicle triangular with angles blunt; pterocardiac ossicles laterally placed at an angle of 60° to cardiac ossicle.

*Petasma :* (Fig. 1, a, b & c). Quite symmetrical and has the general form of the species of *Metapenaeus* group. It resembles that of *M. affinis,* but differs much in size and shape of the distal ends. In adult it is comparatively smaller in size and extends only to the base of the fourth pereiopod. The distomedian lobes are more transversely placed with the proximal end narrow and distal end broad. Distance between tips 1/3 length of petasma.

*Appendix masculina :* Distal piece with more or less rounded dorsal surface ; ventral surface with triangular depression ; a few minute apical setae present.

*Thelycum :* (Fig. 1, d). Anterior plate tongue shaped and wider posteriorly, placed at a level with and bounded on either side by expanded coxal projections of the fourth pereiopod ; the median groove of this plate widens posteriorly. Posterior plates concave, glabrous and transversely cut into two unequal segments ; the lateral edges of these segments curve up and are placed one behind the other.

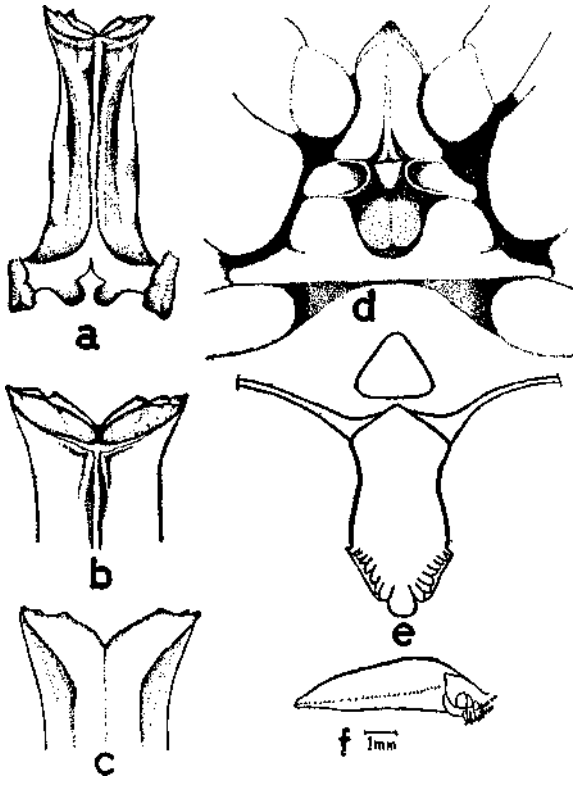


FIG. 1. *Metapenaeus kutchensis* sp. nov. *a.* Ventral view of petasma ; *b.* distal ventral view of petasma ; c. distal dorsal view of petasma ; *d.* thelycum ; *e,* cardiac, urocardiac, pterocardiac and prepyloric ossicles ; /. cardiac plate and zygocardiac ossicle.

*Colour :* Body light brown in preserved specimens with speckling of minute greenish blue spots on the abdomen. Tips of uropods greenish blue.

*Discussion :* The present species is very closely related to both *M. monoceros* Fabricius as described by Alcock (1906), Kubo (1949), Barnard (1950), Dall (1957) and Hall (1958 & 1961) and *M. affinis* M.—Edw. described by Alcock (1906) and **Kubo (1954)** (= *M. mutatus* [Lanchesterl synonimised by Hall 1961). But it differs

from both in certain distinct characteristics. A comparison of the diagnostic features of these three species is tabulated below :

| Item | *M. kutchensis* | *M. monoceros* | *M. affinis* |
|---|---|---|---|
| *I.* Pubescence. | Body only partly covered with harsh and very short tomentum. | Body fully covered with harsh and very short tomentum. | Carapace finely setose; abdomen may have some glabrous areas. |
| 2. Rostrum. | Straight and with a small crest. | Nearly straight and uptilted. | More curved and less uptilted. |
| 3. Mid-dorsal carination of the abdominal segments. | Carination commences from the fourth segment. | Carination commences from the second segment. | Carination commences from the second segment. |
| 4. Ischial spine on 1st pereiopod. | Present, | Present. | Generally absent; if present small denticle only. |
| 5. Length of 5th pereiopod. | Reaches a little beyond the middle of antennal scale. | Reaches a little beyond the middle of antennal scale. | Surpasses the tip of the antennal scale by dactylus. |
| 6. 5th pereiopod of adult male. | With a shallow notch and feeble tooth at the base of merus. | With a notch and hook-like spine at the base of merus. | With a notch and tooth at the base of the merus. |
| 7. Petasma. | Distomedian lobes more transversely placed with proximal end narrow and distal end broad. | Distomedian lobes hood-like. | Distomedian lobes ending in a pair of two-lipped spouts resembling a pair of short horns. |
| Thelycum. | Posterior plate concave, without ear like lobes, cut transversely into two unequal segments, with no apparent clusters of setae between them. | Posterior plate concave, bounded laterally by elevated ear-like lobes. | Posterior plate laterally flat, cut transversely into two unequal segments, with conspicuous clusters of setae between them. |

From the above table it is evident that *M. kutchensis* cannot be merged with either *M. monoceros* or *M. affinis* although it shares some of their features. In the general pattern of the thelycum and petasma particularly in the transversely cut lateral lobes of the posterior plates of the former and the distomedian lobes of the latter and also in the nature of the notch and tooth on the merus of the fifth pereiopod of the adult male, the present species comes closer to the *M. affinis* group. At the same time it differs from it by features such as the striking shortness of the fifth pereiopod, absence of the ischial spine on the first pereiopod and absence of mid-dorsal carination in the anterior abdominal segments. Although this has prompted the authors to describe it as a new species, it is possible that further research may relegate some of the species to subspecific rank following a better understanding of the speciation problem in penaeid prawns. The authors are quite aware of the need for caution in the creation of new species within the genus *Metapenaeus*, stressed by Racek (1955), but consider it important to record the characters of *M. kutchensis* which allow of its effortless distinction from other related species occurring in the Indian region.

We are particularly thankful to Dr. A. A. Racek of the University of Sydney,

Australia for the scrutiny of the material and helpful criticism of the manuscript. The authors are also grateful to their colleagues at Kandla Research Unit for help in the procurement of the material.

## REFERENCES

ALCOCK, A. 1906. Catalogue of the Indian Decapod Crustacea in the collection of the Indian Museum, Part III, Macrura *(Penaeus)* : 1-55.

BARNARD, K. H. 1950. Descriptive catalogue of South African Decapod Crustacea. *Ann. S. Afr. Mus.* 38 : 1-837.

DALL, W. 1957. A revision of the Australian species of Penaeinae (Crustacea Decapoda: Penaeidae). *Aust. J. Mar. Freshw. Res.* 8(2) : 136-230.

HALL, D. N. F. 1958. Distinctions between *Metapenaeus monoceros* (Fabr.) and *Metapenaeus ensis* (De Haan) (Crustacea Decapoda). *Ann. Mag. Nat. Hist.* Ser. 13, i : 537-44. i

————. 1961. The Malayan Penaeidae (Crustacea, Decapoda). Part. II. Further Taxonomic notes from the Malayan species. *Bull. Raffles Mus.* 29 : 76-119.

KUBO, I. 1949. Studies on Penaeids of Japanese and its adjacent waters. /. *Tokyo Coll. Fish.* 36 : 1-467.

————. 1954. Systematic studies on the Japanese Macrurus Decapod Crustacea. 2. On two penaeids, *Metapenaeus affinis* (H, Milne-Edwards) and *M. burkenroadi,* nom. nov., erected on the Japanese form known as *M. affinis. J. Tokyo Coll. Fish.* 41 : 89-95.

LAKUMB, N. C. 1960. Prawn Fishery of Kutch, Gujarat State. *Souvenir published by the Directorate of Fisheries, Gujarat State on the occasion of the Fishery Festival, October* 1960.

RACEK, A. A. 1955. Littoral Penaeinae from New South Wales and adjacent Queensland waters. *Aust. J. Mar. Freshw. Res.* 6(2) : 209-41.

SRIVATSA, K. R. 1953. *A survey and comparative analysis of the prawn {shrimp) fishery of the Gulf of Kutch in Saurashtra in Western India.* Dep. Industries & Supplies, Govt, of Saurashtra